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Introduction: Stories of Energy: Narrative in the Energy Humanities

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This collection of essays is an output of the UK research project ‘Stories of Change: Energy in the Past, Present and Future’.¹ Its principal aim is to explore the insights which narratives, literary and non-fiction, afford into the processes and consequences of energy generation and consumption, and energy system change, and to consider what implications such insights may have for the transition to renewable energy. At the same time, the special number was conceived as a test of the ability of narrative to serve as a focus for interdisciplinary work in the environmental humanities.² ‘Stories of Change’ was an interdisciplinary research project focused on humanity’s changing relationship with energy in the past, present and future, whose ultimate ambition it was to provide a more plural and imaginative account of our present and future energy choices.³ The project drew on stories as a central concept because of their importance in responding to the urgent and difficult problems of climate change and the associated challenges of our energy system, the scale of which are not currently reflected in the public and political responses. Telling stories possesses an important consciousness-enhancing function for the subject as well as the reader, and has a part to play in public debates on the environment and energy.⁴ Working through areas of current concern with hitherto marginalised actors and exploring elements of a collective vision for the future, ‘Stories of Change’ sought to encourage individuals and communities to think about the role of energy in their lives and the necessity for change. (See the project’s online collection of oral stories at <storiesofchange.ac.uk>.) This issue of *Resilience* is concerned solely with written narratives; nonetheless it draws on the ‘Stories of Change’ project’s use of ‘story’ as a device around which different disciplines – literature, history, design, geography, social and policy research – and methodologies – digital storytelling, oral history, creative practice – could be gathered.⁵

Narrative in Environmental Humanities

Environmental Humanities has emerged in the 21st century as a vibrant interdisciplinary field of research addressing the social and cultural dimensions of pressing contemporary socio-environmental problems, including resource depletion, environmental injustice,

anthropogenic climate change and the escalation of species loss. Work in history, philosophy, anthropology, geography, sociology, literature, the visual arts, media and communication, and the interdisciplinary field of science and technology studies has been collected together in a flood of publications, new journals, and research centres, starting in Australia, and rapidly extending to America, Britain and Europe (Scandinavia and Germany in particular). Fostering dialogue and debate across the disciplinary divides that separate the arts, humanities and social sciences, and reaching out to the natural sciences, Environmental Humanities examines the underlying socio-cultural assumptions, values, and practices that both shape, and are in turn shaped by, patterns of human interaction with more-than-human others and our physical environment.

A key challenge for researchers in Environmental Humanities has been the need to focus and coordinate efforts in the disciplines involved to analyse, explain and facilitate the finding of solutions for complex environmental problems. The frequency with which the Anthropocene is referenced (the proposed new geological epoch in which human beings have become agents of change on a planetary scale, including, but not limited to, climate change) reflects its usefulness as a unifying concept.⁶ Another effort to develop shared theoretical and methodological principles underpinning Environmental Humanities work has been the adaptation of Frame Analysis, a procedure hitherto principally located in media and communication studies. One of the editors of this collection of essays has contributed to this initiative with a research network on 'The Cultural Framing of Environmental Discourse',⁷ workshops on frame analysis, and articles examining framing in literary energy narratives.⁸ Here, however, we adopt an approach focused on *narrative*. We are not, of course, the first to argue that the study of narrative has a key role to play in the core disciplines in the wider field of Environmental Humanities, or that of Energy Humanities, as we shall see from recent work in literary study around econarratology, in history (since the so-called 'narrative turn' in the 1980s), and on scenarios.

Econarratology

Since Erin James introduced the term 'Econarratology' in her book *The Storyworld Accord: Econarratology and Postcolonial Narratives* in 2015,⁹ a growing number of scholars have argued that narrative analysis deserves to play a central role in Environmental Humanities.¹⁰ Econarratology draws principally on literary and rhetorical methods of textual analysis, but

claims that these have the potential to inform work in non-fiction texts of all kinds as well as literature. It asks on the one hand *whether* and if so *how* textual, filmic and other forms of narrative engage readers and viewers and influence their attitudes and behaviour, and on the other whether the Anthropocene calls for new narratives.

Narrative is described in the *Routledge Encyclopedia of Narrative Theory* as “a basic human strategy for coming to terms with time, process, and change.”¹¹ The cognitive and educational psychologist Jerome Bruner argued, in *Actual Minds, Possible Worlds*,¹² that narrative making is wired into the human brain as the key mechanism for representing reality, and *the* a priori concept through which we apprehend reality. The activity of imaginary world making through narrative undergirds everyday thinking, philosophy, and even science as well as literature, and our very sense of self. Drawing on Graham Swift’s description of man as the “storytelling animal,”¹³ Jonathan Gottschall writes in *The Storytelling Animal. How Stories Make Us Human*: “We are, as a species, addicted to story. Even when the body goes to sleep, the mind stays up all night, telling itself stories.”¹⁴ Stories “saturate our lives”, fiction “subtly shapes our beliefs, behaviours, ethics”, powerfully modifying culture and history. This is because sets of brain circuits “force narrative structure on our lives” (xvii). In biological and evolutionary terms, stories appear to perform a number of different functions: They are a means of gaining access to sexual partners (by displaying skills, creativity and intelligence); a form of cognitive play, exercising the mind; a source of information and vicarious experience; and “a form of social glue that brings people together around common values” (28).

Econarratology combines ecocriticism’s interest in cultural representations of the environment and the human/ nature relationship with narratology’s focus on the structures and devices by which narratives are composed. For James, it is above all a study of the structuring of the ‘storyworlds’ which readers immerse themselves in when they read narratives, of the relationship between these and the real world. Storyworlds are mental models of the contexts and environments within which a narrative’s characters function. David Herman, who originated the term, defines them as “mentally and emotionally projected environments in which interpreters are called upon to live out complex blends of cognitive and imaginative response, encompassing sympathy, the drawing of causal inferences, identification, evaluation, suspense, and so on”.¹⁵ Research into them complements narratologists’ traditional study of the temporal aspects of narratives, by

looking at the organisation of space as well as that of time. In doing so, it enhances awareness of the role played by natural environments.

James examines the textual cues which serve as the building blocks of storyworlds, inviting readers to inhabit a particular point of view. She focuses on the organisation of space and time, the depiction of characters, the representation of consciousness (focalisation), and the relationship between narrator and narratee. Building on neurophysiological research into the ability of engagement with storyworlds to trigger real-world emotions and neural responses, and the narratological work of David Herman, Patrick Hogan and others, she explains that storyworlds and narratives have the ability to initiate mimicry or simulation of experience, and catalyse a mental and emotional ‘transportation’ of readers.

Narratives are repositories for values, political and ethical ideas, and sets of behaviours which play a part in determining how we perceive and interact with the natural environment. Readers engage in different ways with these values, emotionally as well as cognitively, and the impact on real-world attitudes and behaviours is by no means straightforward. James is particularly interested in the potential of the reading process to raise awareness of the differences between the environmental experiences and imaginations of people in different countries, regions, and social classes. The textual material which she examines in her book is postcolonial literature, from the Caribbean and Nigeria, and she argues that “storyworld accords,” i.e. agreements about the future informed by the environmental insights and sensitivities to difference that narrative storyworlds offer readers, could help people recognise and resolve the differences in the perception of environmental problems which are encountered in international meetings (p. 225). By virtue of their power to immerse readers in environments and environmental experiences different from their own, she claims that narratives can bridge imaginative and cultural gaps, and facilitate North/ South negotiations on climate change, environmental migration, and the loss of habitats and species (pp. 42f., 208). Roman Bartosch’s essay in this special number is concerned with the potential of studying postcolonial literary narratives to inform energy debates and address environmental injustice. However, the potential gain from focusing analysis of environmental texts on narrative structure goes beyond this application.

As Gottschall writes, fiction projects us into intense simulations of problems that run parallel to those we face in reality. (58) When we experience fiction, our neurons are firing much as they would if we were actually facing the circumstances in real life. (63) So it is plausible that our constant immersion in continual fictional problem-solving should improve our ability to deal with real problems. Fiction rewires our brains, since thinking or feeling something is an activation of a pattern of neuronal excitation, and repetition of a task establishes denser and more efficient neural connections. This is where cultural narratives and even individual literary narratives which resonate with horizons of expectation come in: they provide readymade patterns which we can fall back on. Fictional characters such as those in *Uncle Tom's Cabin*, *A Christmas Carol*, the *Iliad*, and *Nineteen-Eightyfour* have impacted on public opinion and transformed society. Psychological research has shown that stories teach us facts about the world (we tend to mix information gained from fiction and non-fiction), influences our moral logic, and marks us with fears, hopes and anxieties that alter our behaviour (148). Fiction indeed seems to be more effective in changing attitudes than non-fiction, because when we are absorbed in a story, we drop our intellectual guard. We are moved emotionally, and this seems to leave us defenceless. Story leads us to enter into the minds of characters, softening our sense of self and opening us to alterity. "If the research is correct," Gottschall concludes, "fiction is one of the primary sculpting forces of individuals and societies." (153)

James's study complemented earlier ecocritical forays into narratology. In her book *Sense of Place, Sense of Planet*¹⁶ and the entry 'Eco-narratives' in the *Routledge Encyclopedia of Narrative Theory*,¹⁷ Ursula Heise has called for examination of the use and transformation of traditional literary tropes and genres in ecological storytelling. Serenella Iovino and Serpil Oppermann have brought another aspect of textual analysis centre stage in their *Material Ecocriticism*, which investigates the ways in which the non-human and nature's agency are narrated and represented in literary texts.¹⁸ And Scott Knickerbocker has written in his book, *Ecopoetics* (2012),¹⁹ about the ways in which poetic form, as much as realist content, can communicate diverse experiences of the physical world, arguing that the figurative and aural capacity of language can evoke natural experiences in powerful ways. However, econarratology's focus on storyworlds and their affective qualities has enabled it to go beyond previous research into tropes, genres, the representation of

nature's agency and poetic symbols, in exploring the ability of literary and other narratives to foster environmental awareness.

In the introduction to a collection of essays on *Ecocriticism and Narrative Theory* which is due to appear in 2018,²⁰ which they generously placed at our disposal in draft form, Erin James and Eric Morel argue that narrative has become a key site of enquiry in Environmental Humanities, citing a series of recent publications by researchers such as Markku Lehtimäki in Finland and Marco Caracciolo in Belgium. They outline three areas of possible future development. The first is more detailed examination of the representation of the non-human and the agency of matter in narratives. This is the focus of Robert Butler's essay in this special number. The second, study of the ethical, political and ideological dimensions of narrative, the cultural and historical values of narrators and readers, and the persuasive function of narrative, is also touched on by several of our contributors (see the essays by Goodbody and Whyte, Emmett and Bartosch). James and Morel see cognitive narratology, focusing on simulation and embodiment, the world-making power of narrative and its potential to immerse and transport readers into virtual environments that differ from the physical environments in which they read, as the third sphere of likely econarratological expansion. A major recent contribution on this subject is Alexa Weik von Mossner's book, *Affective Ecologies: Empathy, Emotion and Environmental Narrative*.²¹ This specialised field, which draws on neurophysiology, cognitive literary studies and affect theory, is not addressed here. Our focus is rather the similarities and differences between non-fiction (realist) and fictional (imaginative) narratives of energy, and the overlap between them.

Narrative in History and Fiction

James and Morel write of "synergies between environmental history and the history of the novel" as an additional potential growth area in econarratology. Collaboration between environmental historians and literary scholars has so far been limited. Although the former have sometimes used literary narratives in their accounts of the past, they have been constrained by the weight given to factual sources and the concern with historical truth in their discipline. (Studies in cultural history such as Stephanie LeMenager's *Living Oil: Petroleum Culture in the American Century*,²² which examines novels alongside poetry, documentary film, museum exhibits and still photography, are an exception.) Focusing on

the defining constituents of narratives, the processes of their production and reception, and the functions they serve could lead to a more fruitful exchange between the two disciplines.

Alun Munslow has provided a helpful overview of debates on the role of narrative in his discipline in *Narrative and History*.²³ Asked what their work consists of, he writes that historians traditionally said they begin by finding out what happened (by consulting sources), go on to explain why events occurred as they did, and finally interpret what it all means (for us), setting the explanation and meaning in a prose narrative. Their perceived aim is to reproduce a “coherent *reality*” of the past, rendering it with analytical *objectivity*, in a narrative conveying the most likely *truth* of the past (1-2). This is, however, a misunderstanding, according to Munslow: because they regard the notion of reference as fundamental, historians have tended to overlook the significance of poetic/ writerly processes in their generating of explanations and meaning, playing down authorial voice, focalisation and expression – at least up to the postmodern/ narrative turn in historical thinking in the 1980s, when history began to be thought of as ‘construction’ rather than ‘reconstruction’ of the past. In a series of influential publications, Hayden White studied the role of tropes in historical writing, arguing that metonyms (constituent parts standing for a wider whole) and metaphors are used to establish a figurative relationship between things, suggesting cause and effect, and thereby invest events with meaning.

As Munslow points out, historians and other non-fiction authors construct narratives in principle as novelists do, giving meaning to the raw material of factual events by selecting, positing causation, assigning agency, setting beginnings and endings, and using terms which imply categories of things. Through such mechanisms of an emplotment, they blend reality with preconceived ideas and imagination. History is an “authored narrative,” albeit “a narrative representations that pays its dues to the agreed facts of the past” (6). It deals more with groups and structures than with individuals. However, it operates, like fiction, with ‘story spaces’ (Munslow’s variant of ‘storyworlds’), i.e. models of what, how, when, why and to whom things happened in the past, into which readers enter when they read, view or experience the past as history. Most historians today accept that historical story spaces are “as much the ethical, emotional and intellectual products of themselves, their agendas and their theories as they are reflections of and on ‘what happened’” (18).

History is then no more a ‘literature of fact’ which is subsequently ‘written up’, a mere report of findings, than fiction is just ‘made up’. Drawing on Hayden White and Paul

Ricoeur, Munslow argues that historians not only choose beginnings, ends, moral statements, empirical references and what theories to apply, and operate with narrative perspective, tense/ time, and focalisation, but also organise historical events through the structure of plot typologies. Historians have ‘heroes’ (person, group or idea), and their emplotment of events is defined by what happens to the hero. Romance, tragedy, comedy and satire are identified as primary plots. History, Munslow concludes (24), “is narrative artifice all the way through from the initial figuring of the past to the finished history.”

This examination of the role of narrative in history shows that the difference between history and literature is by no means simply one of fact versus fiction, and that there is a fundamental commonality between *historical narratives*, which are grounded in fact and bound by their obligation to objectivity and truth, yet tell a story and *construct* the past, and *fictional stories* with their symbolic representations and poetic licence to dramatize, invent, and imagine alternatives. A third form of narrative is discussed here, albeit briefly, in Renata Tyszczyk’s essay on R. Buckminster Fuller’s future energy perspectives: ‘scenarios’. Scenarios, which sketch possible futures by extrapolating (selectively but logically) from current trends, are situated midway between history and literature, inasmuch as they combine real data with imagination in stories.

Scenarios

Renata Tyszczyk and Joe Smith have recently argued that scenario-building has a central role to play in helping facilitate energy transition by informing the public about possible futures, outlining choices and motivating people to participate in shaping the future.²⁴ Scenarios were originally synopses of the action of plays, which served as aide-mémoires for the actors in sixteenth-century Italian improvised street theatre (Commedia dell’arte). In the 1960s the word was adopted by Herman Kahn and others for the outlines of multiple possible futures which were developed as part of strategic planning for possible nuclear conflict, before the approach was applied in the analysis of environmental issues in the landmark publication *The Limits to Growth* (1972). Making sense of the future by asking ‘what if?’, scenarios are tools for learning, in which the different climate policy strategies are modelled and tested. As a form of synthetic storytelling driven primarily by scientific and economic data, but open to contingencies and alternative outcomes, they stand somewhere between historians’ pursuit of historical truth in their reconstructions of the past and the

imagined futures in realist literature. Especially if enhanced by recovery of “the improvisational and reflexive intentions that were part and parcel of the origins of scenarios as a situated cultural form,” Tyszczyk and Smith argue that scenarios can serve as a valuable “‘rehearsal space’ for a diverse, multidisciplinary and collective undertaking of social transformations.”²⁵

Nikoleris, Stripple and Tenngart have juxtaposed literary and scientific scenarios in a recent article. Asking how cli-fi novels relate to and complement the IPCC’s latest generation of scenarios (“shared socioeconomic pathways,” or alternative versions of the evolution of society over the coming century), they argue that literary fiction brings the worlds imagined in IPCC scenarios to life through its particular accounts of agency and focalized perspectives.²⁶ They describe scenarios as ‘learning machines’ which bring shape to debates around science and policy issues, and ‘thought experiments’ that ask what if-questions so as to permit the development of more robust policies. Concerned with larger societal factors and trends (the social, economic and political conditions that policies for mitigation and adaptation will have to manage), they present a smooth development of these broad societal trends, making extensive use of passive constructions which leave agency unspecified, whereas literary narratives are focused on individuals, and characterised by conflicts and ambivalences. Nevertheless, the authors argue, “[w]hile scientific and literary scenarios differ significantly in terms of means, methods, practices, functions, and effects, they both rely on forms of narrative: of telling compelling stories about the nature of the world and the means through which climate change can be mitigated or adapted to.” (308)

The four essays on literary texts presented here and the two on non-literary texts seek to bear out our contestation that narrative provides a basis for comparative analysis and critical appraisal of the contribution of different forms of account to the understanding of our human relationship with energy which is needed in the Anthropocene.

Narratives in Energy Humanities

The study of narratives of climate change – in media discourse, in political or industry documents, or in the literary narratives of cli-fi and climate change plays for example – and the analysis of narratives in the Energy Humanities are clearly distinct fields of enquiry. But given the centrality of carbon emissions from the energy sector in driving climate change, the two are also inextricably linked. As already mentioned, we believe that the study of

narrative and narratives has a key role to play in the response of the humanities disciplines to the energy challenges that face society, particularly in the carbon intensive economies of the global North. Just as the field of climate change research experienced a 'cultural turn' in the 2000s, with the former climate scientist Mike Hulme's *Why We Disagree About Climate Change*²⁷ a key text, so the Energy Humanities can be understood in part as an equivalent attempt to think through the cultural implications of energy. Critical attention to narrative, this special issue argues, is a key part of understanding the cultural dimension of the matrix of energy and climate challenges facing society.

In the past, public concern with energy has generally been a product of its real or perceived shortage. The oil crisis in the early 1970s, when the suppliers of oil in the Middle East clamped down on production following the Yom Kippur War, brought home to a generation of Americans and Europeans accustomed to cheap energy the dependency of their way of life on an abundance of this concentrated fuel. Since a second peak in 2007-8, the price of oil has halved, for a combination of reasons, the principal ones being global recession, sustained production levels by leading OPEC countries, America's ability to meet a growing proportion of its energy needs by fracking, and advances in renewable energy technologies. The day when global oil resources run out has been put off indefinitely. If energy supply remains a matter of acute concern for national governments and publics, it is now because of recognition of the role of carbon emissions in climate change. Technological innovation in energy production and energy conservation measures will doubtless help, but changes in energy consumption and conflicts over them are unavoidable. The public must play its part in reaching energy decisions, and public expertise in energy issues is as important as ever.

This expertise includes critical awareness of common energy arguments and narratives. An evolving body of research is currently exploring narratives and representations of energy in the context of climate change, in history, geography, broadcast, print and online news media, on television, and in other forms of non-fiction discourse, using different forms of discourse analysis in the broadest sense.²⁸ Parallel with this work, narrative has been one of several approaches in ongoing work in the Energy Humanities, which has emerged in the last ten years as a burgeoning sub-field of Environmental Humanities, thanks not least to the centrality of energy in climate change discourse and Anthropocene debates. Energy Humanities is the study of the historical and

cultural record of our relationship with energy, registering and critiquing the dependence of modernity on exponentially growing consumption of fossil fuels, and articulating anxieties and hopes associated with energy abundance, energy scarcity, and the shift to renewable energy. In their 2010 think piece, “Breaking the Impasse: The Rise of Energy Humanities,”²⁹ Dominic Boyer and Imre Szeman write of the “strong equation of energy and modernity” and the “dominant narrative of the modern.” The task of critical theory in the humanities has been to expose “the multiple fictions of this narrative,” but they have so far tended to leave out the crucial element of “our understanding of the modern – energy” (2). Boyer and Szeman call for work on energy which reconfigures ecological subjectivities, fosters critical energy literacy, and facilitates social change.

Change is at the core of both narrative and its importance for the Energy Humanities. Narratives, by their nature, require change. As Graeme Macdonald has written of fictional narratives, their events rely on energy – “on momentum and transference; absorbing and exuding, circulating, conserving and converting energy and resources” – so too they rely fundamentally on change.³⁰ Narrative, and critical attention to narrative, can help its readers to reconsider change, in the past, present and future.

Studying past narratives can help us to appreciate the fact that energy system change has been a repeated occurrence across recent human history, rather than some uniquely contemporary challenge. This fact is well illustrated by a 2011 special number of PMLA, in which Patricia Yaeger called for a reframing of literary historical periods, not by centuries or movements (Renaissance, Romanticism, etc.), but through the dominant energy source (Wood, Tallow, Coal, Whale Oil, Gasoline, Atomic Power etc.). The collection included essays on the literature of each of those energy sources.³¹ While it is important to remember that these are not simple, linear transitions, consideration of energy literatures reminds us of the repeated changes between energy sources. Likewise attention to the narratives of these transitions can show how they may have simplified or framed more complex situations: that the Industrial Revolution was one founded exclusively on coal, for example, as opposed to a mix of energy sources.

Turning to the future, narratives allow alterity, helping to imagine and compare alternative futures and consider how the world might be if it was otherwise, envisioning changed futures with different social, political and economic structures to those that are embedded in, or reliant upon, our energy system today. The study of such narratives of the

future may also uncover revealing restrictions: some scholars, such as Imre Szeman, have seen a limitation of narratives of future energy systems in their tendency to present either the promise of techno-utopianism or a vision of eco-apocalypse.³² Certainly, it seems that “energy is often central to utopian designs for future societies. Conversely, utopian impulses have been particularly strong during times of actual or predicted energy transitions”.³³ In this way, narratives of future energy also reflect back to us our present, revealing our current fears and desires: in other words “Energy futures tell us more about the present than they do about the future”.³⁴ The problem with such utopian narrative imaginings of future energy is that many “entail maintaining our lives and practices as they exist with petroleum and simply swapping oil out for a different energy source that magically takes its place and replicates precisely its roles”.³⁵ In his essay here, Bradon Smith addresses some of these concerns and argues that imagined energy futures can help us by asserting the possibility of energy system change, without the easy promise of an energy utopia.

As we have seen in discussing scenarios, narratives are inextricably bound up with all the systems through which we understand, apprehend and respond to the problems of climate change and our energy challenges, and the massive social changes that these require. Climate models; the emissions scenarios of the IPCC reports; the targets and mechanisms of the international agreement signed in December 2015 in Paris at the United Nations Framework Convention on Climate Change Conference of the Parties 21; national climate change policy responses – traces of narrative can be considered in each of these cases. The dangerous future consequences of our current fossil fuel-dependent energy system, in the form of climate change, are understood through climate models that are run against different emissions scenarios; in other words, different narratives of our future. Policies intended to mitigate the carbon emissions associated with our current energy system through changes in our behaviour or wholesale changes in how we generate energy likewise rely on a story of change – a vision of the future which is persuasive and plausible and can be the basis for creating such a change. Scholars are increasingly seeing that part of the process of framing policy ideas for publics “involves narratives or storytelling that can capture the public’s imagination and shape both political discourse and policymaking”.³⁶ Indeed, as one of the editors of this collection has argued elsewhere, as well as seeing how narratives help us to understand our present economic and political energy ‘realities’, and the possible future alternatives to the matrix of social, political and economic structures

that underpin our present energy system, we must also understand that the study of these realities is also partly a study of these narratives.³⁷ The economics and politics that underpin the drilling for oil, capital investment in petroleum giants, and even international climate legislation, are built on narrative foundations.

Seeing this, we realise that analysing energy narratives may help us in understanding our present too, particularly the resistance to change exhibited by our current energy system, since narratives are also part of the foundations of the status quo. As Barrett and Worden argue, the “failure of imagination” that prevents future narratives with genuine alternatives to oil “can be partially remedied by understanding how oil works in culture”.³⁸ Here too, narrative surfaces as part of the means by which petroleum has embedded itself so completely not only in social, economic, infrastructural and political terms, but also in cultural terms, as Stephanie LeMenager has shown in *Living Oil*.³⁹ It is in attention to literary narratives of energy, in particular, that Energy Humanities can continue to reveal this important cultural dimension to energy.

Literary narratives of energy

Interest in energy as a literary theme is a recent development. Energy is an abstract concept, despite the centrality of energy conversion in our lives, and at first glance the energy sources on which societies are based appear invisible in the literary canon. But on further examination, wood and water power, coal, oil and nuclear energy prove to be present in a surprising number of works. Indeed, it is increasingly recognised that fictions help to make the presence of energy in our lives visible, thereby exposing hidden mechanisms of power and social hierarchy, and revealing the inappropriateness of the ways in which we tend to think about energy generation and consumption, and our relationship with the material world more generally. Research into the subject originated in Postcolonial and American Studies. The Bengali novelist and essayist Amitav Ghosh’s declaration of ‘petrofiction’ as a new genre back in 1992 is commonly regarded as the point of departure.

Oil culture has rapidly gained recognition among American scholars as an autonomous field of study, having received a new impetus from climate change and the need to transition to renewables. The twentieth century has been described in retrospect as a high-energy society and a mature fossil-fuel civilisation. As the Canadian energy expert Vaclav Smil wrote in 2004: “The new century cannot be an energetic replica of the old one,

and reshaping the old practices and putting in place new energy foundations is bound to redefine our connection to the universe.”⁴⁰ A special number of the *Journal of American Studies* on ‘Oil Culture’ appeared in 2002, followed by articles and book chapters by Frederick Buell, Peter Hitchcock and Graeme Macdonald, and a special edition of the *American Book Review* on ‘Petrofictions’ (2012). In 2014 a collection of essays on *Oil Culture* edited by Barrett and Worden appeared, and Stephanie LeMenager’s book, *Living Oil*. Standard texts on the syllabuses of the university courses in petrofiction which have sprung up in the USA include, alongside the novel discussed by Amitav Ghosh (Abdul Rahman Munif’s *Cities of Salt*, 1984, a reflection on the impact of oil production on culture and life in the Middle East), Upton Sinclair’s 1927 novel *Oil!*, the 2007 film loosely based on it, *There Will Be Blood*, Gary Snyder’s cultural critique of energy consumption in a small but significant body of poetry and prose published over fifty years since the mid 1950s, Linda Hogan’s historical novel of the dispossession of Osage Indians who found themselves owners of oil bearing land in the 1920s, *Mean Spirit* (1990), and the Nigerian novels of Ken Saro-Wiwa and Helon Habila (*Oil on Water*, 2011), depicting the deforestation and devastation of the Niger delta by oil drilling, and the displacement and even massacre of its indigenous population.

Exploration of the theme of energy in literature broadened out from petrocriticism in the special number of PMLA already referenced, to address a range of other dominant energy sources (wood, tallow, coal, atomic power and so on). Imre Szeman wrote in the same number on sources of energy in imagined energy futures, arguing that these speculative fictions either perpetuate the present fiction of a continuing energy surplus that sustains our current way of life, or they imagine a post-apocalyptic world of energy lack that serves as a cautionary tale. Bradon Smith takes this further in his essay in this publication, arguing that energy lack can feed into a nostalgic and utopian ideal of a return to an agrarian energy system, and such representations often involve small communities withdrawing from society in general.

To date, most work on energy fiction has come from America – perhaps not least because it is arguably the society most radically shaped by oil and the car in the twentieth century. Working in the UK and Australia, Graeme MacDonald and Andrew Milner have published further significant work in the field, and Paula Farca’s collection of essays, *Energy in Literature* (2015),⁴¹ includes studies of Canadian, English, Australian, Nigerian, Spanish,

French and South and Central American writing. At the same time, researchers in Victorian literature (Choi, Gold, MacDuffie) have turned to representations of coal and energy, contextualising them in nineteenth-century scientific and political debates on the impact of coal, the new energy source of the Industrial Revolution, on public health and the state of the nation, and contemporary anxieties about resource depletion associated with notions of “living off the capital” of coal, entropy, and heat death of the sun. Dickens, Eliot, Ruskin, Conrad, Wells and other Victorian writers prefigured some of today’s energy-related concerns (depletion of resources, pollution and environmental cost to health, waste disposal, the social and political consequences of energy system change). MacDuffie writes that the representation of energy in Victorian literature both echoed and challenged the way it was represented in scientific discourse. Moralising energy, Victorian writers warned of the social impact of the new energy-intensive economy, and sought to address the problem of perceived dissipation, socio-political disintegration and moral degeneration by fostering a compensatory ‘mental energy’, creativity and community spirit, not least by means of depicting positive role models and symbolically recuperating energy in narratives of order, closure and providence in their writing. Poets, novelists and critics offered a unique – if tentative and equivocal – window onto the growing consciousness of unsustainable energy use, helping to imagine how individual human actions might have global consequences. Literature served at least in part as an ecologically anxious counter-discourse in the face of heroic, energy-intensive industrialisation.⁴²

The Humanities are united in insisting on the need to understand what and where we are, and how we got here, as noted in a recent collaborative article for which Hannes Bergthaller served as lead author.⁴³ They hold that human beings cannot but act on the basis of collective memories, present convictions, and anticipated futures. They share common ground in their emphasis on reflection and interpretation, the attention they pay to texts and contexts, and their effort to reveal their deeper implications, ambiguities, and blind spots. Yet diverging trajectories and differences in attitudes, interests and methods have stood in the way of useful dialogue between the disciplines which would make up the Environmental Humanities. Ecocritics, environmental historians and environmental philosophers “need to be jolted out of disciplinary ruts and mindsets”,⁴⁴ and to reassess the history of their respective disciplines so as to identify connections and lines of convergence.

Three moments are identified by Bergthaller and his co-authors where a sensitivity to both historical perspective and textual complexity has enabled mutually informed accounts of environment and environing: eco-historicism, environmental justice, and New Materialism. Gillen D'Arcy Wood has defined 'Eco-Historicism' as "the study of climate and environment as objects of knowledge and desire, analyzed through 'thick' description of specific episodes of ecological micro-contact," writing: "The environmental effects of globalized trade and migration belong within the domain of the physical and social sciences, but the rationalizations for their impact—the intentionality of globalization, the psycho-cultural formations enabling the exploitation and trade of earth's agricultural and mineral resources, as well as the cultural forms of an embryonic ecological consciousness—are natural subjects for eco-historicists equipped with the tools of discourse analysis developed in literary and cultural studies over the last thirty years."⁴⁵ Operating within "an expanded matrix of political, economic, and cultural phenomena," Eco-Historicism "would be licensed to speculate upon qualitative sources of all kinds—poems, diaries, newspapers, paintings, folklore, etc.," with the aim of establishing "what the hard data of historical climatology meant in cultural terms, in the minds and lived experience of the people who endured or benefited from a specific meteorological regime, and how human cultures have both adapted to and shaped environmental change."⁴⁶

The reflections on Jennings' *Pandaemonium* which Whyte and Goodbody develop in a dialogue between the disciplines of environmental history and ecocriticism might be seen to contribute to the project of eco-historicism. The authors of 'Mapping Common Ground' acknowledge fundamental differences of approach between the disciplines, noting that for historians the relevance of a text lies primarily in its capacity to exemplify a larger historical development, while literary scholars are more likely to emphasize the singularity of a particular text and the distinctive experience it affords readers (p. 272). However, Whyte and Goodbody find in the complexities, ambivalences, inherent contradictions, partial disclosures and overlaying of Jennings' accounts of energy change through conventions of thinking and form a congenial common ground for exploration of past energy narratives, and suggest that a similar approach to contemporary stories of the transition to renewable energy could be equally fruitful.

Environmental justice has acted as a unifying principle for multi-disciplinary intellectual projects focused on an overlapping territory where social, cultural and

environmental challenges must be confronted all at once, merging social analysis and critique with close attention to textual detail and political advocacy. Roman Bartosch's essay in this issue goes in this direction. The third avenue for interdisciplinary research, New Materialism, has focused on things, bodies, and animality, challenging the tendency to gloss over the agency of matter in our everyday lives. Robert Butler attempts such a study of coal in the twentieth century in his essay in this issue of *Resilience*.

While discussion of literary texts predominates in this collection of essays, the first essay is co-authored by an environmental historian and a literary scholar, and examines both factual and aesthetic aspects of the text in question. A second essay juxtaposing historical and literary accounts of energy generation and environmental change is the work of a literary scholar (Robert Emmett) who until recently worked in an interdisciplinary centre for research and education in the environmental humanities and social sciences (the Munich-based Rachel Carson Center). And a third essay examining future energy scenarios is contributed by a historian of architecture and ideas (Renata Tysczuk). "There is a growing understanding that narratives are of central importance not only to science communication [...] but to our relationship with all other humans and nonhumans as well as the larger environment", Alexa Weik von Mossner writes at the end of *Affective Ecologies*. "I hope that this will open up new possibilities for interdisciplinary cooperation and transdisciplinary convergence, and that we will explore further, in both the theoretical and the empirical realm, what environmental narratives of all kinds [...] might contribute to our understanding of the world around us and our place in it." (Loc. 5382) This special number, which can of course only suggest paths for others to follow, is offered in the same spirit.

Narratives are fundamental to the way in which humans organise and understand their experiences, giving meaning to and connecting disparate events. Climate change has been described as a 'super-wicked' problem: changing our high-energy high-carbon society presents similar difficulties. The apparent disconnect between action and consequence, its interconnected ethical, political, social and economic dimensions, issues of intergenerational and global justice – all these are central to our energy challenges, but are also aspects which critical analysis of narrative is well placed to elucidate. Studying narrative may then be important in helping society collectively to engage with the nature of the problem, not as an abstract phenomenon, political football, or mere engineering challenge,

but rather as a set of realities that exists simultaneously on human and planetary scales, and generational and geologic timescales.

¹ 'Stories of Change: Energy in the past, Present and Future' was funded by the UK Arts & Humanities Research Council as part of its Connected Communities programme (Grant AH/L008173/1), and ran from 2014 to 2017. Four of the six essays collected here were first presented as papers at the ASLE-UKI biennial conference in Cambridge in September 2015, as part of a special strand convened by the Stories of Change project, entitled 'Energy Narratives'; the other two were presented at project workshops in Cambridge and Bath.

² Stories were chosen as a unifying concept and transdisciplinary tool in the 'Stories of Change' project, which sought to revive stalled public and political conversations about energy in Britain through a combination of research, artistic projects and innovation in the use of digital media. (For an overview of the project's activities and key findings, see Joe Smith, Robert Butler, Rosie J. Day, Axel H. Goodbody, David H. Llewellyn, Mel Rohse, Bradon T. Smith, Renata A. Tyszczyk, Julia Udall, and Nicola M. Whyte, "Gathering around Stories: Interdisciplinary Experiments in Support of Energy System Transitions," *Energy Research & Social Science*, Narratives and Storytelling in Energy and Climate Change Research, 31 (1 September, 2017): 284–94. <https://doi.org/10.1016/j.erss.2017.06.026>. "Gathering around Stories".)

³ "Stories of Change." Stories of change – Exploring the past, the present and the future of energy, <https://storiesofchange.ac.uk/about>.

⁴ See Anthony Nanson, *Storytelling and Ecology: Reconnecting nature and people through oral narrative* (Glamorgan: University of Glamorgan Press, 2005).

⁵ Narratologists distinguish between 'story,' as an account of a sequence of events, *what* is told (what Russian Formalist theorists called 'fabula'), and 'narration' (Russian 'syuzhet'), as the *manner* in which it is told (which often involves presentation of the events in different order and duration). Here, however, story and narrative are treated as synonyms.

⁶ See for instance Noel Castree, "The Anthropocene and the Environmental Humanities: Extending the Conversation," *Environmental Humanities* 5 (2014), 233-260; Dipesh Chakrabarty, "Humanities in the Anthropocene: The Crisis of an Enduring Kantian Fable," *New Literary History* 47, no. 2-3 (Spring & Summer 2016): 377-97; Serpil Oppermann and Serenella Iovino, eds, *Environmental Humanities: Voices from the Anthropocene* (London and New York: Rowman and Littlefield International, 2016); Sabine Wilke and Japhet Johnstone, eds, *Readings in the Anthropocene: The Environmental Humanities, German Studies, and Beyond* (New York, etc.: Bloomsbury, 2017).

⁷ See <cfod.co.uk>.

⁸ See Axel Goodbody, "Stories of Energy in Contemporary Novels: Reframing Energy through Narratives, Genres and Metaphors," *Metaphora. Journal for Literature Theory and Media* EV 2: Climate Change, Complexity, Representation. Guest ed. Hannes Bergthaller. 2017. <<http://metaphora.univie.ac.at/volume2-goodbody.pdf>>; and Goodbody, "Framing in Literary Energy Narratives," in: Hannes Bergthaller and Peter Mortensen, eds, *Framing the Environmental Humanities* (Leiden and Boston, Mass: Brill Rodopi, 2018), 15-33.

⁹ Erin James, *The Storyworld Accord: Econarratology and Postcolonial Narratives* (Lincoln, NE: University of Nebraska Press, 2015).

¹⁰ While American ecocriticism has until recently been more interested in environmental content than narrative form, French *Écocritique*/ *Ecopoetics* draws, as Daniel Finch-Race and Stephanie Posthumus demonstrate in *French Ecocriticism. From the Early Modern Period to the Twenty-First Century* (Frankfurt am Main: Peter Lang, 2017), on a longstanding tradition of narratology initiated by Roland Barthes, Gérard Genette and others.

¹¹ David Herman, Manfred Jahn and Marie-Laure Ryan, *Routledge Encyclopaedia of Narrative Theory* (London and New York: Routledge, 2005), ix.

¹² Jerome Bruner, *Actual Minds, Possible Worlds* (Cambridge, Mass.: Harvard University Press, 1986).

¹³ Graham Swift, *Waterland* (New York: Poseidon/Simon and Schuster, 1983), 53. See also Walter Benjamin, "The Story-Teller: Reflections on the Works of Nicolai Leskov," trans. Harry Zohn, *Chicago Review* 16, no. 1 (Winter/Spring 1963): 80-101.

¹⁴ Jonathan Gottschall, *The Storytelling Animal. How Stories Make Us Human* (Boston: Mariner Books, 2013), xiv.

¹⁵ David Herman, *Story Logic. Problems and Possibilities of Narrative* *Lincoln, NE: University of Nebraska Press, 2002), 16f.

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- ¹⁶ Ursula K. Heise, *Sense of Place, Sense of Planet: The environmental imagination of the global* (Oxford: Oxford University Press, 2008).
- ¹⁷ Ursula K. Heise, "Eco-narratives," in David Herman, Manfred Jahn and Marie-Laure Ryan, eds, *Routledge Encyclopedia of Narrative Theory* (Abingdon: Routledge, 2005), 129-30.
- ¹⁸ Serenella Iovino and Serpil Oppermann, eds, *Material Ecocriticism* (Bloomington and Indianapolis: Indiana University Press, 2014).
- ¹⁹ Scott Knickerbocker, *Ecopoetics: The Language of Nature, the Nature of Language* (Amherst, Mass.: University of Massachusetts Press, 2012).
- ²⁰ Erin James and Eric Morel, eds, *Ecocriticism and Narrative Theory* (Columbus, OH: Ohio State University Press, forthcoming 2018).
- ²¹ Alexa Weik von Mossner, *Affective Ecologies: Empathy, Emotion and Environmental Narrative* (Columbus, OH: Ohio State University Press, 2017).
- ²² Stephanie LeMenager, *Living Oil: Petroleum Culture in the American Century* (Oxford: Oxford University Press, 2014).
- ²³ Alan Munslow, *Narrative and History* (Houndmills, Basingstoke: Palgrave Macmillan, 2007).
- ²⁴ Renata Tyszcuk and Joe Smith, "Culture and climate change scenarios: the role and potential of the arts and humanities in responding to the '1.5 degrees target'," *Current Opinion in Environmental Sustainability* 31 (April 2018), 56-64; here 56. <https://doi.org/10.1016/j.cosust.2017.12.007>.
- ²⁵ Tyszcuk and Smith, "Culture and Climate Change Scenarios," 58.
- ²⁶ Alexandra Nikoleris, Johannes Strippel and Paul Tennngart, "Narrating Climate Futures: Shared Socioeconomic Pathways and Literary Fiction," *Climatic Change* 143, no. 3-4 (August 2017): 307-19; here 317.
- ²⁷ Mike Hulme, *Why We Disagree About Climate Change: Understanding Controversy, Inaction and Opportunity* (Cambridge: Cambridge University Press, 2009).
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